Operant Conditioning in Education

A. C. Kazepides
simon fraser university

L'auteur fait l'analyse de la conception de B. F. Skinner sur la relation qui existe entre le conditionnement opérant et les exigences rationnelles de notre idéal pédagogique. L'auteur prétend que bien que le conditionnement opérant joue un rôle important en pédagogie, c'est un rôle restreint; il affirme aussi que la distance que prend Skinner face aux concepts tels que éducation, autonomie, liberté, etc. fait disparaître les distinction logiques (rationnelles) qui sont indispensables à l'éducation et à l'enseignement. Il dénonce l'usage extensif qu'a fait Skinner du terme technique "renforcement" qu'il applique à des sujets non-expérimentaux; cet usage a pour effet de rendre ce concept vague ea inutile en plus de créer chez les gens la confusion et de les éloigner des préoccupations éducatives les plus importantes.

There is an interesting similarity between the concepts of "conditioning" and "indoctrination." In ordinary language they are both used as pejorative terms. However, "indoctrination" is not used pejoratively by the person who speaks from the inside of a doctrinal form of life. In fact, indoctrination here is regarded as an important responsibility of the sectarian community. Similarly, "conditioning" is not regarded as a pejorative term by Skinner and his disciples who are engaged in the "experimental analysis of behavior."

Although there is still some disagreement among educators about the relative importance of content, intention, or method as criteria of indoctrination, it is almost unanimously accepted that "indoctrination" is a pejorative term that is used to refer to some form of miseducation. However, it is not yet clear to educators whether or not "conditioning" is a pejorative term as it is not obvious which, if any, criteria of education are violated. Hence the need for an examination of that concept. But "conditioning" is a rather wide term and it would be impossible in a paper of this size even to sketch all the various views on it and the educationally important issues related to these views.

The purpose of this paper then is to examine Skinner's concept of operant conditioning as well as his claim that autonomy is a utopian and therefore illegitimate educational objective. The reason for choosing to examine Skinner's views is that he is the major contemporary spokesman of radical behaviorism whose influence on education and other areas is steadily increasing. However, it is not the intention of this paper to dispute the value or the efficacy of behavioral technology (in education or elsewhere) al-

though there is considerable counter-evidence for many of these claims (for a summary of research that contradicts Skinnerian claims see Russell, 1974; 135 studies are listed).

In order to decide on the appropriateness of conditioning as an educational process, we must first sketch briefly some important requirements of our educational ideal.

The requirements of our educational ideal

It makes a great difference whether we view education as the pursuit of an ideal or simply as a means for the achievement of other, external goals. If we perceive education as an ideal then the character of that ideal will have important implications for the selection of the appropriate content and methods of teaching. However, if we take education to mean simply the transmission of knowledge and the development of skills and attitudes that are deemed necessary for the attainment of some other goal (e.g. survival, national prosperity, etc.), then the goals, content, and methods of teaching are determined exclusively by the nature of that external, non-educational goal.

Educational theorists and policy-makers have been oscillating between these two views since Plato. On one hand they have been committed to their educational ideal and to its widest possible diffusion into all the institutions of their society. On the other hand they have been tempted to view education as a convenient instrument for correcting social, political, or economic evils. (The two concerns are not antithetical in principle, although in actual life they almost always are.) We might conclude that the degree to which a particular educational policy-maker feels the tension between these two (often conflicting) demands and the manner in which the demands are reconciled in a particular society are indicative of the character of that society and the quality of life it assures for its members.

However, in spite of such oscillations and confusions, there is remarkable consistency in the character of our Western educational ideal. First, as an ideal it is inseparable from our most important value judgments, choices, and commitments. Second, it is the nature of an ideal to be pursued for its own sake rather than for the sake of some further external end. Third, we believe today that the educated person is one who has some depth of knowledge and understanding rather than mere scraps of information or simple skills: so all educational thinkers have believed from Heraclitus and Plato to Whitehead, Jaeger, and Peters (for a discussion of the criteria of education see Peters, 1966; 1970).

Finally, we believe that the educated person, unlike the person who is under the influence of compulsion, suggestion, hypnosis, drugs, extreme passions, or mental disease, is the person who, by virtue of his knowledge and understanding, has achieved a certain degree of autonomy or self-direction in important matters in his life. Rather than being entangled in

an inevitable causal chain, the educated person can see the limitations as well as the possibilities that are open to him as an inhabitant of the world and as a member of human society, and can choose on the basis of the relevant norms and the available evidence. There is nothing mystical, esoteric, miraculous, or otherworldly about this notion of autonomy. Autonomy is neither a natural given nor the result of some sort of natural unfolding; it is an educational achievement, inseparable from the development of our knowledge and understanding of ourselves and the world that surrounds us. And it is not an absolute attainment that some people have achieved and others have failed to reach. Autonomy is a matter of degree; one may behave autonomously with respect to some aspect of his life and heteronomously with respect to other aspects of his life.

We consider methods like hypnosis, deception, use of force, conditioning, propaganda, and indoctrination to be inappropriate for the task of developing autonomy, for logical or moral reasons. Such methods are logically inappropriate if they are external to the logical operations that are constitutive of the intellectual activity. Hypnosis, for example, would be logically inappropriate if used by a teacher who wanted his students to understand the Pythagorean theorem or the theory of evolution. Some of the methods, like indoctrination or propaganda, are logically inappropriate because they violate canons of reasoning, tests of validity for arguments, tests of truths for beliefs, and so on.

The above methods are *morally* objectionable either because, by violating canons of reasoning, etc., they distort and pervert the human mind, or because, by considering human interaction merely as a causal process, they bypass the human mind. In both cases we say that human beings are not treated as persons, that is, as agents who understand reasons, follow rules, and act purposefully.

The consequences of accepting an educational ideal are complex and of fundamental importance not only for educational policy and practice but for the whole style of life that we want to propagate.

Skinner's views

The concept of education sketched above is not to be found in any of the writings of B. F. Skinner. His definition of education is so broad and vague that it is impossible to distinguish it from many forms of miseducation. Skinner says: "Education is the establishing of behavior which will be of advantage to the individual and to others at some future time" (1953, p. 402). On the basis of such a definition it would be impossible to distinguish educational goals, institutions, activities, and responsibilities from non-educational ones. So Skinner's talk about "military education" instead of military training should not surprise us (1953, p. 405).

Skinner's idea of the educated person is not less vague. He says "The educated person differs from the uneducated in almost everything he does"

(1968, p. 13). He "is perhaps better able to adapt himself to his environment or, adjust to the social life of his group, and a culture which emphasizes education is probably more likely to survive" (p. 200).

If education is not an ideal worth pursuing for its intrinsic values, what other goal is worth our commitment? According to Skinner, our primary, unquestionable goal should be the survival of our culture. Survival is the overriding commitment according to which a given cultural practice, including education, should be evaluated. But "survival is often in direct conflict with traditional values" including the educational ideal that we have outlined. Therefore, "in order to accept survival as a criterion in judging a culture, it thus appears to be necessary to abandon such principles as happiness, freedom, and virtue" (Skinner, 1953, p. 432). Above all, we must abandon our belief in the autonomous man and in all the prerequisites of autonomous man, such as states of mind, personalities, feelings, traits of character, plans, purposes, and intentions, in order to get on with a scientific analysis of behavior (Skinner, 1971, p. 13). We have not been able to make any progress in human affairs because "the world of the mind steals the show. Behavior is not recognized as a subject in its own right" (1971, p. 10).

All reference to the inner man, the autonomous man and his feelings, attitudes, wants, and intentions are "explanatory fictions" that serve as stoppers in our quest for the real causes of behavior. "Autonomous man serves to explain only the things we are not yet able to explain in other ways. His existence depends upon our ignorance, and he naturally loses status as we come to know more about behavior" (Skinner, 1971, p. 12). In addition to rejecting the autonomous man and all mentalistic explanations we must look more carefully into the effect of the environment upon organisms. The environment is not simply "a passive setting" in which many different kinds of organisms are born, reproduce themselves, and die. "The environment acts in an inconspicuous way: it does not push or pull, it selects" (p. 14).

It is, Skinner claims, a fact that "all control is exerted by the environment" (1971, p. 77) and therefore our task is to design better environments rather than better men. The consequences are obvious. When "a scientific analysis shifts the credit as well as the blame to the environment, . . . traditional practices can then no longer be justified" (p. 19). The important task of educational technology then is to find the most effective and least aversive controls of human behavior.

Skinner's suggestion is that "we must take into account what the environment does to an organism not only before but after it responds. Behavior is shaped and maintained by its consequences" (1971, p. 16). This fact has two important results for the development of a technology of behavior: "Behavior which operates upon the environment to produce consequences ('operant' behavior) can be studied by arranging environ-

ments in which specific consequences are contingent upon it . . . The second result is practical: the environment can be manipulated." Unlike *respondent* behavior, which is elicited reflexly by particular stimuli, *operant* behavior is emitted by the organism without having any particular identifiable eliciting stimuli.

Apart from genetic human endowment, Skinner argues, our behavior is determined entirely by "reinforcement."

> When a bit of behavior is followed by a certain kind of consequence, it is more likely to occur again, and a consequence having this effect is called a reinforcer. Food, for example, is a reinforcer to a hungry organism; anything the organism does that is followed by the receipt of food is more likely to be done again whenever the organism is hungry. Some stimuli are called negative reinforcers; any response which reduces the intensity of such a stimulus — or ends it — is more likely to be emitted when the stimulus recurs. [1971, p. 25]

This is Skinner's reformulation of Thorndike's Law of Effect, which says:

> Of the several responses made to the same situation, those which are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected to the situation so that when it recurs, they will be more likely to recur; those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connection weakened, so that, when it recurs, they will be less likely to recur. [Thorndike, 1913, p. 2]

Skinner does not allow any "satisfiers" or "annoyers" in his system because he considers all references to mentalistic terms to be explanatory fictions. A reinforcer is whatever increases the probability of a response — and we do not know why reinforcers reinforce.

However, only a small part of behavior is immediately reinforced with "primary reinforcers" like food, water, and sexual contact. Other things like money, grades, and diplomas function as reinforcers because they can be exchanged for primary reinforcers. These Skinner calls "conditioned reinforcers." Conditioned reinforcers, in turn, become "generalized reinforcers" when they are paired with more than one primary reinforcer.

But, Skinner warns us: "It is easy to forget the origins of the generalized reinforcers and to regard them as reinforcing in their own right. We speak of the 'need for attention, approval, or affection', 'the need to dominate' and 'the love of money' as if they are primary conditions of deprivation" (1953, p. 80). In other words, Skinner is not willing to allow conditioned reinforcers any degree of independent functional autonomy. He is a radical reductionist.

The task of the effective behavioral engineer is not to build inner virtues and encourage moral struggle, but to induce people to behave well. "There is no reason why progress toward a world in which people may be automatically good should be impeded" (Skinner, 1971, p. 63). As long as we believe in autonomous man we will continue to use weak and ineffective

means of control such as persuasion, not realizing that every time we appeal to the inner man we leave control of behavior to other factors in the environment. Thus, the defenders of autonomy, freedom, and dignity, by opposing direct and effective methods of manipulating human behavior, prolong social malaise and human suffering. The plethora of punitive institutions and practices in our culture is to a large extent the result of our irrational belief in autonomous man and the ineffective practices that are condoned by that belief.

The false dilemma

On first acquaintance with Skinner's views one remains somewhat ambivalent. Skinner tells us that our cultural survival is at stake. Consequently he advises us that we must abandon, among other things, the purposive language in which man has been talking about himself for thousands of years; we must give up the utopian belief that we can develop the autonomous, free, and responsible person; and we must obliterate the conventional distinctions between educational and non-educational processes and adopt more direct and effective methods of behavioral control — traditional educational methods of instruction being weak and ineffectual.

This is only part of the price we must pay if we are to benefit from the technology of operant conditioning. The technology is apparently so powerful that Skinner does not hesitate to say: "Give me the specifications, and I'll give you the man" (1948, p. 2).

The benefits, according to Skinner, are numerous: survival of our culture, elimination of the punitive institutions and practices that are prevalent in our oppressive society, freedom from moral struggle, the attainment of natural goodness, and others. However, as we will see later, the dilemma is false.

A needed emphasis

To deny the effectiveness of reinforcement amounts to denying the obvious fact that the consequences of our behavior (i.e. actions) have something to do with the subsequent occurrence or nonoccurrence of the behavior. It is that relationship that makes such actions intelligible and subject to purposive explanation. When no such relationship can be found, our commonsense explanation is inapplicable and we appeal to some theory of human behavior for a different type of explanation.

In view of the fact that nowadays there are too many reformists getting excited about freedom, dignity, and self-actualization, but unable or unwilling to study the conditions under which such goals can be achieved, Skinner's emphasis on the importance of the consequences of our behavior must receive our qualified approval.

Although the role of reinforcement is limited for the acquisition of propositional knowledge, it is particularly fitting and effective for the

development of a great number of worthwhile habits. The almost total lack of concern for the development of habits in our educational institutions is by no means justified. The lack of concern results from uncertainties and confusions about the nature of habits and about the justifiability of certain fundamental principles of human action. The emphasis on training through reinforcement is a much-needed antidote to the excessive permissiveness which amounts to the abandonment of rational educational policy.

Finally, Skinner's emphasis on *positive* reinforcement is an appropriate and timely recommendation for a society that is unnecessarily punitive, oppressive, and prone to empty moralizing.

However, on closer inspection of Skinner's views one begins to see conceptual confusions, hidden value judgments, oversimplifications of complex issues, false dilemmas, and a series of straw arguments especially designed and presented in order to secure easy victory for the author. What is particularly disturbing is that some of Skinner's philosophical claims about autonomy, freedom, and responsibility reveal lack of knowledge of the important recent literature on these topics. So the reader who is not familiar with recent discussions on these issues might mistake Skinner's deceptive writings as representing clear formulations of the issues, and Skinner's views as the only reasonable conclusions about them.

Education and survival

Education for Skinner is inseparable from those activities that have survival value. But without a more clearly defined concept of education one lacks a basis for distinguishing between educational and non-educational goals, activities, and institutions. We are justified, then, in saying that Skinner's concept of education is a *primitive* one: it does not provide a basis for *educational* planning and evaluation. It would be crude and naive, for example, to assess the value of an educational method solely on the basis of its effectiveness in controlling human behavior: methods such as deception, hypnosis, suggestion, external constraints, propaganda, and indoctrination we would not consider using in education, for very good reasons.

The value of such methods is purely instrumental and is exhausted with the attainment of the goal for which they were employed. To educational and social planners who, like Skinner, view education in the same way in which they view the above processes, we can put the question "What is to be your next goal when your present one is achieved?" In other words, for how long could one continue to justify actions by pointing to their instrumental value, and how worthwhile would human life be if we could not pursue activities for their intrinsic value?

Survival cannot be offered as the goal of education or social planning, because the quality and character of survival, for which education prepares us, is the crucial question at stake. We must ask Skinner to clarify his notion of survival in order to be able to evaluate it.

What is reinforcement?

After reviewing numerous traditional metaphorical ways of talking about teaching, Skinner rejects them all because they do not tell the teacher what to do or let him see what he has done. Skinner concludes that "any serious analysis of the interchange between organism and environment must . . . avoid metaphor" (1968, p. 4). However, Skinner does not dispense with metaphorical language; indeed, his attempts to recast our ordinary educational talk into the new 'behaviorese' destroys or obscures some logically valid and educationally important distinctions we make in ordinary language.

Skinner's concept of reinforcement is a case in point. Under laboratory conditions one may determine what events strengthen a particular behavior of a rat or pigeon (e.g. presenting food or water, or removing extreme cold or electric shock) by observing the frequency of a selected response, then making an event contingent upon it and observing any change in frequency. In order for these kinds of experiments to be successful the experimenter must define the desirable objective, manage the conditions carefully, assume or create a state of deprivation, administer reinforcement at appropriate intervals (and thus make the subject dependent on the experimenter), make sure that the subject does not come in contact with other stimuli that might interfere with the experiment, and so on.

Even though the most effective brainwashing techniques employed during World War II could not assure laboratory-like conditions like the above, it seems that human beings do develop some habits, tastes, and tendencies of the kind that are developed under laboratory conditions. The training of animals and infants is to a large extent based on the principle of strengthening desirable behavior by providing appropriate reinforcements. Also many habits and tastes that we develop later in life seem to be formed, to a large extent, through accidental configuration of contingencies of reinforcement. It does not seem to be appropriate, in these cases, to talk about examining alternatives, applying norms, and making informed judgments and choices. Even habits that initially were developed with reason are often reduced to rather automatic behavior that follows some causal regularities. It is not uncommon, for example, for a person when asked questions like "Why do you light a cigarette every time you enter your office?" to answer "Do I?" or "Out of habit," or "I don't really know."

However, not all human habits, tastes, preferences, attitudes, norms, and skills are acquired in the above fashion. Unlike animals and infants, adult human beings perceive the world in terms of their previous experiences, norms, and whole categorical apparatus.

There is an unbrideable gap between the technical Skinnerian (third-person) use of the verb "to reinforce" and its ordinary (first-person) homonym. The difference is not difficult to see.

First, in order to verify the statement "The pigeon's Xing behavior

has been reinforced," one has to observe the pigeon's behavior before and after the experiment. However, no observation is required for making an ordinary first-person claim such as "The new evidence reinforces my argument that the president is guilty."

Second, the ordinary first-person statement implies certain rules according to which the new information is judged to be relevant evidence of the president's involvement, and certain norms according to which the president is judged to be guilty.

It is because animals and infants are not capable of understanding and employing rules of evidence and norms of conduct that they cannot make first-person statements like the above. If a parrot or an infant says "The new evidence reinforces my argument that the president is guilty" we think of it merely as a cute joke — neither the parrot nor the infant can make that claim, although they can be successfully reinforced to *utter* the phrase.

In no way can we stretch Skinner's technical term "reinforcement" to cover the ordinary use mentioned above. None of the features of the experimental paradigm are present in the ordinary use of "reinforcement" where the relationship between evidence and opinion is a logical not a causal one.

As soon as human perception and understanding are involved in learning we can no longer give an accurate account of learning without considering personal judgment and interpretation. As N. R. Hanson put it, "There is more to 'seeing' than meets the eyeball. And there is more to scientific observation than merely standing alert with sense organs 'at the ready' because it is all interest-directed and context-dependent (1967, p. 91). And yet Skinner does extend his concept of reinforcement to anything that increases the probability of a response. But the more he extends "reinforcement" to non-experimental cases the less he is able to specify what a reinforcer is. Noam Chomsky, after listing numerous examples of what Skinner considers to be reinforcers, comments as follows:

> We see that a person can be reinforced though he emits no response at all, and that the reinforcing *stimulus* need not impinge on the *reinforced person* or need not even exist (it is sufficient that it be imagined or hoped for). When we read that a person plays what music he likes . . ., says what he likes . . ., thinks what he likes . . ., reads what books he likes . . ., etc., BECAUSE he finds it reinforcing to do so, or that we write books or inform others of facts BECAUSE we are reinforced by what we hope will be the ultimate behavior of reader or listener, we can only conclude that the term *reinforcement* has a purely ritual function. The phrase "X is reinforced by Y (stimulus, state of affairs, event, etc.)" is being used as a cover term for "X wants Y," "X likes Y," "X wishes that Y were the case," etc. Invoking the term *reinforcement* has no explanatory force, and any idea that this paraphrase introduces any new clarity or objectivity into the description of wishing, liking, etc., is a serious delusion. The only effect is to obscure the important differences among the notions being paraphrased. [Chomsky, 1964, p. 558]

Skinner seems to be aware of the limited scope of his technical concept of

reinforcement and, since he wants to make it applicable to non-laboratory situations, he tries to find synonyms in ordinary language. Thus in *Science and Human Behavior* he claims that insofar as scientific definition corresponds to lay usage, reinforcers are rewards (Chomsky, 1964, p. 185).

That claim is certainly false. Skinner's technical use of "reinforcement" is not synonymous with any concepts in ordinary language.

"Reward" is one of those words (like "bribery," "payoff," "award," "prize") that are tied down to the notion of intention. One does not identify something as a reward the way one identifies an apple, a carrot, or a pellet of food.

Reward involves the idea of recompense for something good or meritorious or, ironically, for something evil. Moreover, rewards are not necessarily reinforcing ("I won't do it because the reward is not good enough"). Reinforcers, on the other hand, are supposed to make what is weak strong or what is strong still stronger. If the subject's behavior is not reinforced then we cannot talk about reinforcers. Which brings us to the consideration of the theoretical value of Skinner's concept of reinforcement — so fundamental to his other claims.

One cannot, in principle, falsify Skinner's theory of reinforcement because it rests on a tautology — a reinforcer is explained in terms of its effect. Since reinforcement means strengthening of a particular behavior, there cannot be reinforcement without the behavior that has been reinforced. It appears, then, that Skinner's theory of reinforcement is in principle unfalsifiable.

Now when there is no conceivable way that one can test a theory, one suspects a disguised doctrine. Of course, doctrines can give to adherents a sense of certainty and are great sources of comfort; they can be used to foster community spirit and even to prompt people to action. However, the practical value of a doctrine should not be confused with its theoretical adequacy.

There is no way one can deny the serious impact of Skinner and his disciples on the formulation of educational objectives and the development of educational methods. Programmed instruction, teaching machines, behavioral objectives, and precision teaching, have been formulated either by Skinnerian psychologists or under their influence. Nevertheless, these impressive practical results do not constitute evidence for Skinner's theoretical claims. Neither can they be said to be derived from Skinner's 'theory' of reinforcement.

Thus careful examination of Skinner's concept of reinforcement shows that, far from being a theoretically useful concept, "reinforcement" is used as a cover term that obliterates the subtle and important distinctions among different modes of human action that we make in ordinary language. The question, therefore, is not whether Skinner's broad claims about reinforcement are true or false but whether the extension of the term beyond its limited technical sense has any meaning at all.

Internal and external reinforcements

If we look at all those things that Skinner lumps together as reinforcers we will see that they fall into two categories: those that are logically external to a particular activity (like food, water, money, petting, smiling, and other forms of approval) and those that are internal to the activity (like the satisfaction one receives from solving a problem, performing a task correctly, being able to explain something, obeying a rule, discovering a new idea, doing what one likes, and so forth).

This distinction is both *valid* and for educational purposes very *important*, but it is obscured under the general label "reinforcement." One can identify external reinforcers independently of the behavior that they reinforce. But one cannot identify internal reinforcers because they are part of their respective activities; the activities are, as we say, their own reward.

In our earlier example, the person who says "The new evidence reinforces my argument that the president is guilty" is not reporting on two events causally connected, i.e. some identifiable outside events that brought about some changes in his behavior. It was not the new events per se that influenced his opinion but the fact that they were judged to be relevant evidence for his argument. Therefore it was the appropriate rules of evidence that enabled the person to "see" the events as evidence, not their reinforcing potential (whatever that means).

The problem of how to bring the young to distinguish between various forms of knowledge and appreciate their unique character will not be solved by vague talk about reinforcement which blurs important distinctions. On the contrary, it is more likely that this most central educational concern will become confused and neglected since the interests of behaviorists lie elsewhere and their technical language cannot describe adequately the important logical issues involved in teaching.

In education we often use external incentives, but our hope is that eventually the learner will come to appreciate the unique character and value of the various disciplines of thought and action and the standards of excellence that are exemplified in them. We believe that the educated person is one who engages in worthwhile activities for what is in them rather than merely for the external rewards that he may receive. He is not a person *controlled* by external incentives, but one disciplined by the logical character and requirements of worthwhile activities — another important distinction that is obliterated in Skinner's new talk.

When we ordinarily speak of controls of human behavior we think of various kinds of external constraints. When our behavior is being externally controlled we are said to be *undergoing* something, for example electric shock, treatments, or brainwashing. Undergoings are not things that we do deliberately or voluntarily. We may consent or refuse to undergo treatment, but not our undergoing it (Thalberg, 1967). Skinner stretched the word "control" out of its context and thus obliterated the distinction between "control" and "discipline." The result, however, is not a better under-

standing of control or discipline, but logical blindness that can play havoc with the very ideals of education.

The person who has been introduced successfully into various disciplines of thought and action has developed certain capacities for thinking, judging, and acting in accordance with the logical requirements of those disciplines. To the degree that his thinking and acting is determined by those requirements, rather than by passion, ignorance, prejudice, external controls, and so on, to that degree we say that he has developed as an autonomous person. Thus a person becomes morally autonomous when he acts in accordance with certain moral rules that are backed by reasons. This is how the autonomous person gains freedom and self-mastery — not through some miracle, as Skinner suggests.

Learning, teaching, and conditioning

A comparison of the concept of conditioning with concepts of learning and teaching suggests some logical discrepancies. We learn (or teach) *that* (meaningful learning), *the* (veridical or truth-functional learning), *to* (active or dispositional learning), and *to be* (committal learning), but we condition only *to* (dispositional learning).

It appears, prima facie, that the scope of things that can be learned by or taught to a person is much larger than the scope of things a person can be conditioned to do. It also appears that any useful discussion of learning or teaching must take account of the content of learning or teaching.

A further look into the various senses of the concepts shows that the above conjectures are justified. A person cannot be said to have learned *that* something is so unless he understands what the particular proposition means. Similarly, one's learning *the* has something to do with the truth of the proposition, and learning *to be* implies a conscious commitment to principles involved in an activity or a way of life (Komisar, 1965). Having been conditioned to X, on the other hand, is only one way of learning *to* X. One may learn to X by imitating somebody, practicing, etc., depending on the nature of Xing. Operant conditioning seems to be appropriate for the establishment of certain habits where repetition of the activity is needed, but is not necessary for the acquisition of propositional learning. As mentioned earlier, the parrot that has learned to say "$2 + 2 = 4$" has not learned the proposition, although it has been properly conditioned to utter the sentence on cue.

There is no possible way that the behaviorist can describe in his limited technical vocabulary the meaningful, truth-functional, and committal senses of learning. To take an example again, "learning *the*" (the truth-functional sense of learning) means coming to know. Knowing, however, is not some kind of psychological state or condition. It requires the truth of what is known — one cannot be said to know something that is not so. It follows, then, that "learning *the*" commits one to the truth of what has

been learned. And that presupposes the learner's awareness of the logical character of the particular form of knowledge in which his claim belongs, as well as of the rules of evidence that are appropriate to that form of knowledge.

It now appears that operant conditioning could be, at its best, Skinner's technical term for what educators call "incentives to learning." The incentives are used in order to get students involved in an activity or improve a student's performance in the activity. They are understood simply as *aids* to learning, since they are external to it. Such aids are not necessary for learning, as the word "aid" suggests. Those persons who have managed to "learn by themselves" we call "self-taught persons," because they did not benefit from institutionalized aids to learning and formal teaching. But we cannot talk about "self-conditioned persons" because operant conditioning, being a form of undergoing, presupposes some external influence on the person.

The person who is engaged in teaching (in what Komisar, 1968, calls the act sense of teaching) performs a number of acts, some of which — like explaining, demonstrating, or classifying — are *intellectual* acts and others — like drilling or reinforcing — are *strategic* acts. Strategic acts are external to the content or the logical nature of the activity that is to be mastered, while intellectual acts are intrinsic to it.

Skinner's claim about the intellectual acts that are involved in learning and teaching are inconsistent and confusing. The positions that could plausibly be assumed are that the intellectual acts are

a) necessary and sufficient for learning or teaching;
b) necessary, but not sufficient for learning or teaching;
c) neither necessary nor sufficient for learning or teaching (that must be what Skinner means when he says that they are fictitious);
d) necessary and sufficient for learning but not for teaching. Skinner holds that (c) is true for intellectual acts but he also holds that intellectual acts are
e) weak measures of control, which should be abandoned for the sake of much stronger measures.

One does not know how to reconcile the contradictory claims. If the intellectual acts (which we take to be the heart of teaching) are "weak measures of control," then they are still sufficient for learning, and Skinner's claim that they are fictitious is simply false.

But of course the intellectual acts are not fictitious. They are not only fundamental to teaching but are central to all our civilized activities and institutions. Skinner's effort to achieve conceptual purity and rigor in his work makes nonsense not only of the work of the educator but of all our intellectual achievements, including Skinner's own efforts to make a case for radical behaviorism.

His claims are paradoxical and self-defeating, because if they were correct he would have been unable to argue that his views are true, plausible,

warranted, or whatever (one needs to perform a host of intellectual acts in order to present complex arguments such as we find in Skinner's writings). If Skinner's claims are nothing more than the result of accidental reinforcements to his behavior, why should he expect us to be persuaded by his personal "Odyssey"? Autobiographies do not constitute arguments, if indeed one could write an autobiography in the language of radical behaviorism.

Skinner's notion of human nature

Skinner remains ambivalent and unclear on the role that human nature and environment play in learning. Operant behavior, he says, "operates upon the environment to produce consequences" (1971, p. 16). But the environment does not remain passive either; "it selects." In his subsequent discussion, however, operant behavior (what we call goal-directed behavior) is allowed only a ceremonial function. As part of his philosophy of human nature it is a convenient invention to which Skinner assigns all sorts of natural tendencies without ever explaining them. So operant behavior, like the struggle for freedom (which "is as much a part of what we call the human genetic endowment as breathing, sweating, or digesting food" [1971, p. 24]) are needed for his theory of positive reinforcement; and "a small imitative repertoire" (i.e. as much as Skinner needs) is required in order to solve what he calls "the problem of the first instance" (1968, p. 208). Skinner's philosophy of human nature, which is fundamental to his other claims, is as satisfactory as the deus ex machina was in the Greek and Roman plays. Although he recognizes a "natural human endowment" that has developed as a result of its survival value in the evolutionary process, he sees in it only those things that will serve his theories. His views on human nature are patchy and lack any systematic expression. He does not hesitate to bend them to support his claims on the scope and effectiveness of operant conditioning.

Like Plato, Skinner holds a very low opinion of human nature. Plato thought that only gods or god-like men could govern people. Skinner, probably under the influence of his laboratory work, prefers the technology of operant conditioning in order to control men. But there is an important difference between them. Although Plato was willing (however reluctantly) to use noble lies in his *Republic*, the citizens of the Republic would still be able to and be encouraged to recognize the difference between lying and telling the truth. In Skinner's Waldens, however, the difference between truthtelling and lying would not be important, even if people could see it.

The possible consequences

Any estimation of the possible consequences of following Skinner's suggestions depends on how his views are interpreted.

Some critics of Skinner, for example, reject the whole talk of operant

conditioning and reinforcement simply because of its behavioristic garb. They falsely believe, as Skinner does, that once one accepts the usefulness of reinforcement, one is obliged to accept also the philosophy of behaviorism. However, operant technology is not derived from the philosophy of behaviorism, nor is the latter implied by it. All current educational programs (such as programmed instruction, teaching machines, precision teaching, and even behavioral objectives) which have come to be associated loosely with radical behaviorism should be considered on their own merits and evaluated independently.

As we saw earlier, operant conditioning is a cover term for many ordinary ways of describing learning. It is possible to interpret it in a narrow sense in order to refer only to the strategic acts of teaching (i.e. acts which are external to the logical nature of what is to be learned). With that interpretation the consequences for education can be many and serious. Exclusive emphasis on the strategic acts of teaching would overlook the intellectual acts that are basic to teaching. That oversight, in turn, would result in neglecting the study of the logic and character of various forms of experience that should be at the centre of the educational enterprise, and consequently losing from our educational institutions whatever educational character they still possess. This narrow view would also put the teacher in a position of absolute authority with respect to the subject matter, and in absolute control of the students. All the criteria of education that were sketched at the beginning of this paper would be violated and our educational ideal abandoned.

We see now that Skinner's recent claim that "no theory changes what it is a theory about; man remains what he has always been" (1971, p. 206) is naive, false, and misleading. Skinner himself is not interested in the survival of our present culture but in the creation of a quite different culture in which the laws of operant technology (whatever they might be) would function as overriding regulative principles of a way of life that would allow people to be automatically "good."

Max Black, commenting on *Beyond Freedom and Dignity*, dismissed Skinner's views as a "*mélange* of amateurish metaphysics, self-advertising 'technology,' and illiberal social policy [which] adds up to a document that is a disservice to scientists, technologists, and to all who are seriously trying to improve the human condition" (Black, 1973, p. 134). One may find Black's words rather harsh, but considering the conceptual confusions and possible undesirable consequences of Skinner's radical suggestions one may have to agree with Black.

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